

William J. Reich

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JDI Bio Logic LLP Mining Services

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Summary

Extensive experience in virtually all sectors of the mining industry with a focus on the precious metals industry. Mr. Reich's experience includes, but is not limited to, coordinating mine permitting programs in accordance with applicable federal, state and local regulations; mining life cycle reviews; environmental quality and management systems guidance; sustainability reviews; feasibility studies; community relations and public outreach programs; facilitating agency and client meetings; regulatory and government affairs guidance; alternative energy programs; implementing multi-resources baseline studies; environmental documentation programs (including NEPA and CEQA); reclamation and revegetation planning and implementation; mine closure guidance; post-mining alternative use programs; hazardous material spill management; landfill management; and more.

Mr. Reich has provided guidance for, and managed projects in Nevada and the western United States; the Yukon Territory of Canada, Australia, and South America. He has managed successful turnkey engineering design and permitting programs for Greenfield mine and expansion project, and has actual mine site operations and environmental management experience.

Skills

- Consulting and contractor management
- Government affairs and regulatory guidance
- Expert witness testimony
- Public outreach programs and community relations
- Confidential critical issue reviews and site assessments/audits
- Feasibility studies and reports
- Strategic planning
- Mine closure assessments
- Environmental documentation programs including NEPA and CEQA
- Post mining alternative use assessments
- Sustainable development programs
- Risk assessments
- Reclamation and revegetation planning and implementation
- Environmental and natural resource baseline studies
- Environmental compliance and permitting programs; local, state and federal agencies

Career Highlights

- Managed the four year permitting and engineering design program for Homestake Mining Company's (a wholly owned subsidiary of Barrick Gold Corporation) Ruby Hill Mine in Eureka County, Nevada. Ruby Hill was named a *Showcase for Mine Permitting* by the U.S. Department of the Interior, Bureau of Land Management (BLM). The BLM has never bestowed this designation on another mine permitting program since Ruby Hill.
- Managed the preparation of the Mine Plan of Operations and Reclamation Plan for the Cosgrave Limestone Project, owned by Chemical Lime Company, in Pershing County, Nevada. Cosgrave was the first mining project in Nevada approved by both the BLM and the Nevada Division of Environmental Protection under the Nevada Reclamation Statute contained in Nevada Revised Statute (NRS) 519A; and the Nevada Mine Reclamation Regulations contained in Nevada Administrative Code (NAC), 519A.
- Served as the Point of Contact for the preparation of the Atlas Gold Bar Mine Expansion Environmental Assessment (EA) Program in Eureka County, Nevada. This EA, which was completed in accordance with the National Environmental Policy Act of 1969 (NEPA), included the preparation of the first large cumulative assessment program completed by the BLM for a mine site in Nevada.

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- Coordinated the reclamation bonding program for the Atlas Gold Bar Mine project located in Eureka County, Nevada. This was the first mine and mill site bonding program to follow the procedures that were eventually promulgated as the State of Nevada Mine Reclamation Regulations contained in NAC 519A.

Select Experience Overview

Regulatory Guidance, Strategic Planning and Government Affairs Consultation

Provides guidance for various federal, state and local agency statutes and regulations associated with projects that range from small (less than five acres) mineral exploration projects to large mine site development and expansion programs. These projects require coordination with diverse agencies including the U.S Bureau of Land Management (BLM), the U.S. Forest Service (USFS), the U.S. Fish and Wildlife Service (FWS), the Army Corps of Engineers (ACOE), the U.S. Environmental Protection Agency (EPA), and other state, city, county and local government agencies. Also assists mining companies with strategic planning for new or expansion projects, and to anticipate both expected and unexpected responses and actions from regulatory agencies, stakeholders, and other 3rd Party individuals and organizations. Planning and coordinating public outreach programs to present specific project issues is a key part of these activities.

Petroleum and Hazardous Material Products Management

Provides guidance to clients for the management (transportation, use, storage, disposal and remediation) of petroleum and hazardous material products, including the implementation of emergency environmental response activities, in accordance with applicable federal, state and local laws, regulations and guidance. These include, but are not limited to, the Federal Oil Pollution Act of 1990; the National Oil and Hazardous Substances Pollution Contingency Plan of 1994; the Federal Oil Pollution Prevention Regulations contained in Title 40, Part 112 of the Code of Federal Regulations (40 CFR 112); and various state regulations where primacy has been delegated by the U.S. Environmental Protection Agency (EPA). Prepares Spill Prevention Control and Countermeasure Plans (SPCC Plans) and Emergency Response Plans (ERPs), in accordance with applicable federal, state and local regulations, which detail specific steps to implement in the event of a spill or release of petroleum or hazardous material products. Key goals of these plans are to minimize impacts, to the extent possible, to the human and natural environments including surface and groundwater resources by implementing appropriate emergency response activities; and reporting requirements to appropriate federal, state and local agencies. Previous experience in managing remediation activities for spills of petroleum and hazardous material products (including cyanide process solutions) at confidential mine sites and industrial locations.

Mine Closure and Post-Mining Alternative Use Guidance

Provides guidance for the closure of various mine site facilities including heap leach pads, tailings impoundments, waste rock dumps, pit lakes, haul and access roads, and other site infrastructure. Key activities include managing geochemical characterization programs and ecological risk assessments to assess potential long-term impacts that could result from closed facilities, and assessing options that could streamline the closure process for specific facilities which would result in release of reclamation bonds held by various federal or state agencies. Mr. Reich also provides guidance to mining companies on potential post-mining alternative use programs for closed or soon to be closed mine sites. These uses include, but are not limited to, alternative energy facilities (solar or wind), appropriate industrial or manufacturing operations, historic mining parks, educational facilities, and potential military installations.

Environmental Documentation Programs

Extensive experience managing and actively participating in the completion of environmental documentation projects as required by the National Environmental Policy Act of 1969 (NEPA) and the California Environmental Quality Act of 1970 (CEQA). Expertise includes overall project and program management; technical reviews of documents; preparation of specific document sections; and designing, supervising and actively participating in the

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completion of baseline studies to collect and analyze resource data that will be assessed for impacts that could result from the implementation of proposed actions and selected alternatives. Excels in providing guidance and interfacing with agencies and clients to streamline these programs.

Natural Resource and Environmental Baseline Studies

Designs, actively participates in, and supervises the completion of natural resource and environmental baseline study programs used to collect resource data to support the successful completion of permitting and environmental documentation programs, including NEPA. Study areas have ranged from less than five acres to 50,000 acres and include such diverse projects as alternative energy, mineral exploration, mining, commercial airports and highways/roadways. Resources assessed during these studies include those typically analyzed during environmental documentation programs including: air, noise, vegetation, wildlife, special status vegetation and wildlife species (including species managed under the federal Endangered Species Act); surface and groundwater resources including spring and seep surveys, historic and pre-historic cultural resources, Native American issues coordination, soils and geology, socio-economics, demographics and environmental justice.

Critical Issues and Site Assessment Programs

Conducts confidential due diligence and site assessment programs to evaluate developed and non-developed facility sites/properties for potential environmental liabilities, regulatory compliance, and operating issues. As needed, the assessments include evaluations of short- and long-term environmental liability related to the management and operation of various infrastructure and industrial/manufacturing facilities; surface and groundwater impacts; reclamation and closure liability; cultural resources; and hazardous materials waste stream reviews. The collected information is reviewed and evaluated to determine potential environmental liabilities that could be assumed by the client should they purchase or assume control of a facility or property. A key activity involves making a "broad-brush" estimate of short- and long-term capital costs that would be incurred by the client for assuming potential liabilities.

Feasibility Studies and Reports

Participates in the preparation and review of prefeasibility and feasibility studies and reports for mining projects including studies and reports prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum National Instrument 43 -101, Standards of Disclosure for Mineral Projects (NI 43 -101) guidelines; and studies and reports prepared according to United States Securities and Exchange Act of 1934 requirements.

Select Projects

Natural Resource Baseline Studies

Gemfield Mine Development Program, Joshua tree Survey and Assessment Project, Esmeralda County, Nevada. Planned and supervised the completion of a 2014 baseline study project that delineated and assessed the health of Joshua trees (*Yucca brevifolia*) located on BLM managed public lands that are proposed for disturbance by Chaparral Gold's Gemfield Mine Development Program. The project assessed over 1,000 trees, and delineated them according to their overall health and potential to survive a transplant and relocation program. The project results will support the completion of the Environmental Impact Statement process being completed in accordance with NEPA.

Buckhorn Mountain Baseline Study Program, Okanogan County, Washington. Planned and coordinated the 2009 to 2012 multi-resource baseline study program for Echo Bay Exploration, Inc.'s Buckhorn Mountain Exploration Project. Detailed data for various resources including vegetation, wildlife, TEC species, noise, socio-economic, hydrology and fisheries, recreation and water rights was collected over the approximate 10,000-acre general project area to support future federal and state permitting requirements and environmental documentation programs including NEPA and the Washington State Environmental Protection Act (SEPA). Individual work plans for each resource reviewed during the baseline program were completed in accordance with applicable agency Data Adequacy Standards and protocols, including the U.S. Forest Service, Okanogan-Wenatchee National Forest.

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Permitting, Compliance, Engineering Design and Environmental Documentation Projects

Client Manager and Senior Review, Confidential Client, Mine Water Assessment Project, Alaska. In 2013 served as the client manager and provided senior review for a project which assessed mine water management operations at a mine site in Alaska. Key tasks included assessing current water management procedures in the underground operations and treatment facilities, and providing recommendations to help ensure the mine remained in compliance with corporate environmental policies and applicable federal and state water statutes and regulations.

Project Manager, Coeur Rochester Mine Amended Plan of Operations No. 9, Pershing County, Nevada. Between 2011 and 2012 prepared the Draft Amendment No. 9 for the Coeur Rochester Mine Plan of Operations and Reclamation Plan. The amended plan presented the proposed mine site expansion activities including the Stage V and Nevada Packard heap leach facilities, expanded open pit mining operations, and proposed reclamation and closure activities. The amended plan would extend the mine life an additional 12 to 15 years. Key issues included incorporating specific information into the amended plan based on EPA comments to the Mt. Hope Mine EIS and the Hycroft Mine Expansion EIS.

Operations, Reconnaissance and Maintenance Plan, Eagle Gold Project, Yukon Territory, Canada. Prepared the 2012 Draft Operations, Reconnaissance and Maintenance (ORM) Plan for the valley fill heap leach facility (HLF) at Victoria Gold Corporation's proposed Eagle Gold Project. The ORM plan was prepared in accordance with the Canadian Dam Association safety guidelines as the valley fill HLF incorporates a dam to maintain the in-heap solution pond and stacked leach ore stability. Key issues discussed in the plan included management of near surface groundwater beneath the HLF, leaching operations during winter operations including sub-zero temperatures, and routine and non-routine maintenance (including emergency response) operations.

Deputy Project Manager, Coeur Rochester Mine Expansion Project Environmental Assessment, Pershing County. This EA, completed between 2010 and 2011, assessed the implementation of Plan of Operation Amendment No. 8 activities including a recommencement of mine operations, phased backfilling of the Rochester Pit, construction and operation of the Stage III Heap Leach Facility, and issues associated with a potential post mining pit lake. Key activities included the completing a Screening Level Ecological Risk Assessment to assess potential risk associated with the closure options for the post-mining open pit.

Environmental Assessment for the 2010 Ruby Hill Mine Land Sale, Eureka County, Nevada. Prepared the EA that evaluated the purchase of 150 acres (surface estate) of U.S. Department of the Interior, Bureau of Land Management (BLM) - managed public lands adjacent to Homestake Mining Company of California's (HMC) privately-owned, 1,664-acre (surface estate), Ruby Hill Mine site. Purchase of the surface estate will allow HMC to optimize mine operations at Ruby Hill. HMC is a wholly owned subsidiary of Barrick Gold Corporation.

BLM Plan of Operations and Reclamation Plan, Apex Limestone Quarry Expansion Project, Clark County, Nevada. Managed and actively participated in the revised, combined 2010 BLM and State of Nevada Plan of Operation and Reclamation Plan for the expansion of the largest limestone quarry in Nevada. A key issue was coordinating the regulatory process between the BLM's Las Vegas Field Office and the Nevada Division of Environmental Protection, Bureau of Mining Regulation and Reclamation (BMRR) as more than 95 percent of the project site is located on private land. A goal of the project was to initiate the process for transferring the lead agency role to the BMRR. Final approval was obtained from the BLM and the BMRR within 90 days from the date of the submittal of the Draft Plan of Operations and Reclamation Plan.

Program/Client Manager, Ruby Hill Mine Permitting and Design Program, Eureka County, Nevada. Served as the Program/Client Manager for the four-year (1993 to 1997) permitting and engineering design program for Homestake Mining Company of California's (HMC is a subsidiary of Barrick Gold Corporation) Ruby Hill Mine located 1.5 miles northwest of Eureka. In coordination with HMC personnel, supervised all essential permitting activities for the exploration and mine development program with the various federal, state and local agencies. Also coordinated and supervised completion of various engineering design activities to support the State of Nevada Water Pollution Control Permit; 43 CFR 3809 approval; and the NEPA environmental documentation

program. Planned, supervised and actively participated in completion of a two-year vegetation, wildlife, geochemical, hydrogeology, and Wetlands/Waters of the United States baseline study program that provided the information required to support the completion of the NEPA program. The BLM named Ruby Hill a *Showcase for Mine Permitting*.

Mine Reclamation Planning and Implementation

Various Project Sites, Western United States. Mr. Reich is principally responsible for the completion of over 40 reclamation plans for mineral exploration and mining projects at sites located throughout the western United States. These plans were completed in accordance with applicable state and federal reclamation regulations and guidelines including those mandated by the states of Nevada, California, Arizona, Oregon, Montana, Idaho, the BLM and the USFS. The plans include estimating reclamation bond costs; designing site and facility specific revegetation programs; and regulatory agency coordination activities. Mr. Reich has also planned and implemented actual reclamation programs for mine site facilities and mineral exploration projects sites.

Mining Feasibility Studies and Reports

Various Mining Clients. Mr. Reich has participated in the preparation and review of the environmental, regulatory and socio-economic sections of feasibility-level studies and economic assessments for numerous mining projects. This includes reports prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum National Instrument 43-101, Standards of Disclosure for Mineral Projects (NI 43-101) guidelines; and studies and reports prepared according to United States Securities and Exchange Act of 1934 requirements. Work product includes published reports, along with confidential studies and reports prepared for internal client review. Recent published reports include the following:

- **Preliminary Feasibility Study, Kings Valley Lithium Project, Humboldt County, Nevada, 2012.** Prepared the environmental, socio-economic and regulatory review sections of this NI 43-101 Technical Report for a lithium mine. Key issues included a detailed review and estimated costs to obtain all the required federal, state and local agency permits and approvals; a summation of the completed and ongoing natural resource and environmental baseline studies; and, preparation of schedule to complete the permitting and approval process including the anticipated NEPA program.
- **Preliminary Economic Assessment and Technical Report, Tami-Mosi Magnesium Project, White Pine and Elko Counties, Nevada, 2011.** Prepared the environmental, regulatory review and socio-economic sections of this NI 43-101 Technical Report for a potential magnesium mine. The project is located within two BLM Districts. A key issue involved a discussion on coordinating the lead agency role between the two districts, including management of the anticipated NEPA process.
- **Oro Cruz Project Resource Estimate, Imperial County, California, 2010.** Prepared the environmental and regulatory review section of this NI 43-101 Technical Report for a potential gold mine. Key issues included a review of California statutes and regulations for hard rock mining including the Surface Mining and Reclamation Act of 1975 (SMARA), and a review of proposed mining activities located within a federal-regulated lower Colorado River groundwater accounting area that is managed for agriculture use in Imperial County.

Critical Issue Reviews and Site Assessment Programs

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and state courts. Based on the results of this review, the client has opted not to pursue additional exploration or development activities at the current time.

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Education

- B.S., Forestry, University of Montana, 1978
- Graduate Course Work, Forestry, Environmental Management, Anthropology, University of Montana

Professional Development

- Vernal Pools, Wetlands and Aquatic Habitats; Oak Woodlands, Chaparral, and Serpentine Habitats; and Central Valley Riparian Habitats, University of California, Davis
- Environmental Auditing, Legal and Regulatory Framework, University of California, Davis
- Health and Safety for Workers, Laws and Regulations, University of California, Davis
- Various seminars, conferences and technical training sessions for environmental, regulatory and natural resource management professionals

Publications and Presentations

Reich, William J., Alvaro Dominguez, Mehagan Hopkins, Melissa Sherman, Phil Tousignant. *Snapshots of Time: Significant Environmental Events that Defined U. S. History*. A poster illustrating the development of the United States, from pre-settlement to current times, as defined by key national and international environmental events and legislations. Presented at the Annual Kleinfelder, Inc. Technical Seminary, Denver, CO, February 2008.

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Reich, William J., Cy L. Wilsey, Michael J. Protani, Kathleen M. Oakes. *Homestake Mining Company's Ruby Hill Mine: A Case Study on How to Streamline the NEPA Process Using Properly Designed and Executed Natural Resource Baseline Studies*. Mining Engineering, Volume 54, No. 3, March 2002. Littleton, CO.

Reich, William J., Cy L. Wilsey, Michael J. Protani, Kathleen M. Oakes. 2001. *Homestake Mining Company's Ruby Hill Mine: A Case Study on How to Streamline the NEPA Process Using Properly Designed and Executed Natural Resource Baseline Studies*. Presented at the Annual Conference of the Society for Mining, Metallurgy, and Exploration (SME), Denver, Colorado, February 2001.

Reich, William J. 2000. *An Overview of the NEPA Process*. Presented to the Reno, Nevada Chapter of the International Right-of-Way Association, December 2000.

Gruell, George E., Wyman C. Schmidt, Stephen F. Arno and **William J. Reich**, 1982. *Seventy Years of Vegetal Change in a Managed Ponderosa Pine Forest in Western Montana - Implications for Resource Management*. Gen. Tech. Rep.-130. Ogden, Utah: U.S. Department of Agriculture, Forest Service Intermountain Forest and Range Experiment Station.

Employment History

JDI Bio Logic LLP, Vice President and Chief Scientist, April 2015 to Present

WJR Consulting, Principal, August 2014 to April 2015

Senior Technical Consultant, CH2M HILL, January 2013 to August 2014

Principal Environmental Scientist, Tetra Tech, 2008 to December 2012

Principal Planner and Scientist, Kleinfelder, Inc., 2007 to 2008

Senior Principal Environmental Scientist/Chief Scientist/Carson City, NV Office Manager, MACTEC, 2003 to 2007

Environmental Section Manager, HDR Engineering, Inc., 2000 to 2003

Senior Environmental Scientist, AGRA Earth & Environmental, Inc., 1997 to 2000

Senior Project Manager, Westec, Inc., 1991 to 1997

Environmental Coordinator and Field Agent, Atlas Precious Metals, Inc., 1988 to 1991

Forester and Forestry Research Positions, Montana, 1978 to 1988